



STIC Search Report

EIC 1700

STIC Database Tracking Number: 200810

TO: Camie Thompson

Location: REM 10D28

Art Unit : 1774

September 13, 2006

Case Serial Number: 10/798224

From: Kathleen Fuller

Location: EIC 1700

REMSSEN 4B28

Phone: 571/272-2505

Kathleen.Fuller@uspto.gov

Search Notes

Claim 1 is way too broad. I had to use Claims 2-6 and 11-13 where R2 and R3 are more defined. The search query was still very broad and would not run to completion in the Registry file. Therefore I did a reverse search, collecting all the registry numbers from 63,000 CA references on light emitting devices. The RN's are crossed to the Registry file and the structure query is searched against this small set of 101575 RN's/structures rather than the 70 mill+ structures in the complete Registry file. There were only 7 structures and 6 CA references found. Three of the 6 references are to the applicant. If you have any questions please give me a call.



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact the EIC searcher or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
- Relevant prior art found, search results used as follows.

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art not found:

- ☐ Results verified the lack of relevant prior art (helped determine patentability)
- ☐ Results were not useful in determining patentability or understanding the invention

Comments:

SEARCH REQUEST FORM

SEP

RCL

Scientific and Technical Information Center

Pat. & T.M. Office

Requester's Full Name: Camie Thompson Examiner #: 79244 Date: 9/16/06
 Art Unit: 1774 Phone Number 301-511-226-1534 Serial Number: 10/798,224
 Mail Box and Bldg/Room Location: Rem 10028 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Light Emitting Molecules + organic light emitting diodes

Inventors (please provide full names): Gabriel Caballero

Earliest Priority Filing Date: 3/10/04

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please do a search on all claims

wherein $t \geq 1$

$x \geq 1$

$b \geq 2$

Thanks

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>R. Fuller</u>	NA Sequence (#) _____	STN <u>L</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>10</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>9/13/06</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>40</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>169 Min</u>	Other _____	Other (specify) _____

subset
reverse search

=> FILE REG

FILE 'REGISTRY' ENTERED AT 15:02:28 ON 13 SEP 2006
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Property values tagged with IC are from the ZIC/VINITI data file
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STRUCTURE FILE UPDATES: 12 SEP 2006 HIGHEST RN 906508-44-9
DICTIONARY FILE UPDATES: 12 SEP 2006 HIGHEST RN 906508-44-9

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH June 30, 2006

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and
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experimental property data in the original document. For information
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<http://www.cas.org/ONLINE/UG/regprops.html>

=> FILE HCAPL

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FILE COVERS 1907 - 13 Sep 2006 VOL 145 ISS 12
FILE LAST UPDATED: 12 Sep 2006 (20060912/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> D QUE L32

L8 69882 SEA FILE=HCAPLUS ABB=ON (LIGHT?(3A)?EMIT? OR EL OR ?LUMINESC?)
(5A) (MOLECULE? OR MOLs OR DEVICE# OR GROUP#)
L9 61499 SEA FILE=HCAPLUS ABB=ON L8 AND (ELECTRIC? OR OPTICAL? OR
PHOTOGRAPH?)/SC,SX
L12 SEL L9 1-30000 RN : 50282 TERMS (TERM LIMIT EXCEEDED)
L13 SEL L9 21973- RN : 50202 TERMS (TERM LIMIT EXCEEDED)
L14 SEL L9 23776- RN : 50204 TERMS (TERM LIMIT EXCEEDED)
L15 SEL L9 25865- RN : 50066 TERMS (TERM LIMIT EXCEEDED)

L16 SEL L9 32423- RN : 36123 TERMS
 L18 50282 SEA FILE=REGISTRY ABB=ON L12
 L19 50202 SEA FILE=REGISTRY ABB=ON L13
 L20 50204 SEA FILE=REGISTRY ABB=ON L14
 L21 50066 SEA FILE=REGISTRY ABB=ON L15
 L23 36123 SEA FILE=REGISTRY ABB=ON L16
 L26 101575 SEA FILE=REGISTRY ABB=ON (L18 OR L19 OR L20 OR L21) OR L23
 L27 STR

Hy @5 N~G3~N G1~Cb~G2 Cb~Ak Cb~Ak~N~Ak
 @6 7 8 2 3 4 9 @10 11 12 13 @17

Cb~Ak~N
 14 15 @16

VAR G1=10/17/16
 VAR G2=5/6
 REP G3=(3-20) A
 NODE ATTRIBUTES:
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 GGCAT IS UNS AT 3
 GGCAT IS MCY SAT AT 5
 GGCAT IS MCY UNS AT 9
 GGCAT IS UNS AT 10
 GGCAT IS MCY UNS AT 11
 GGCAT IS MCY UNS AT 14
 DEFAULT ECLEVEL IS LIMITED
 ECOUNT IS M6 C M2 N AT 5

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 16

STEREO ATTRIBUTES: NONE

L30 7 SEA FILE=REGISTRY SUB=L26 SSS FUL L27
 L31 6 SEA FILE=HCAPLUS ABB=ON L30
 L32 6 SEA FILE=HCAPLUS ABB=ON L31 AND L8

=> D L32 1-6 BIB ABS IND HITSTR

L32 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2005:1004217 HCAPLUS
 DN 143:295245
 TI **Light emitting molecules and organic
 light emitting devices including light
 emitting molecules**
 IN Caballero, Gabriel Joseph
 PA USA
 SO U.S. Pat. Appl. Publ., 45 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005202273	A1	20050915	US 2004-798224	20040310
	WO 2005097209	A1	20051020	WO 2004-US7526	20040310

*broad query covering
 Claims 2-6, 11-13, R₂ and R₃*

7 structures

6 C A references

applicant

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 2004-798224 A 20040310

OS MARPAT 143:295245

AB **Light-emitting mols.** are described which comprise an anchoring group, ≥ 1 middle groups comprising a conjugated group bonded to ≥ 1 **light-emitting group**, and a charge transfer group. The **light-emitting group** may be conjugated with a metal ion (especially a lanthanide ion). Organic **light-emitting devices**, pixels, and displays employing the mols. are also described. The mols. allow self-assembly of **light-emitting mols.** on a substrate with the anchoring groups serving to attach the mols. to the substrate.

IC ICM H01L029-22

INCL 428690000

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 76

ST self assembling light emitting mol
 electroluminescent display

IT **Electroluminescent devices**
 (displays; self-assembling light-emitting mols. and organic light-emitting devices using them)

IT Luminescent screens
 Luminescent substances
 (electroluminescent; self-assembling light-emitting mols. and organic light-emitting devices using them)

IT **Electroluminescent devices**
 (organic; self-assembling light-emitting mols. and organic light-emitting devices using them)

IT Luminescent substances
 Self-assembly
 (self-assembling light-emitting mols. and organic light-emitting devices using them)

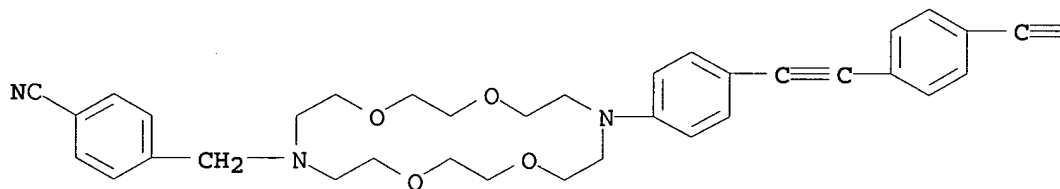
IT 7429-91-6D, Dysprosium, reaction products with organic mols.
 7440-21-3D, Silicon, reaction products with crown compds. 7440-27-9D, Terbium, reaction products with organic mols. 7440-53-1D, Europium, reaction products with organic mols. 22541-18-0D, reaction products with organic mols., uses 22541-20-4D, reaction products with organic mols., uses 22541-21-5D, reaction products with organic mols., uses

RL: DEV (Device component use); USES (Uses)
 (self-assembling light-emitting mols. and organic light-emitting devices using them)

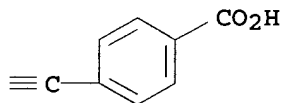
IT 16922-05-7DP, reaction products with silicon-bound crown compds.
 681486-40-8DP, reaction products with europium acetate and silicon substrates

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (self-assembling light-emitting mols. and organic light-emitting devices using them)
 IT 540-37-4 589-87-7 619-58-9 1066-54-2 17201-43-3 23978-55-4
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (self-assembling light-emitting mols. and organic light-emitting devices using them)
 IT 16116-78-2P 75867-39-9P 134856-58-9P 176977-39-2P 681486-33-9P
 681486-34-0P 681486-35-1P 681486-36-2P 681486-37-3P
 681486-38-4P 681486-39-5P 681486-40-8P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (self-assembling light-emitting mols. and organic light-emitting devices using them)
 IT 681486-40-8DP, reaction products with europium acetate and silicon substrates
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (self-assembling light-emitting mols. and organic light-emitting devices using them)
 RN 681486-40-8 HCAPLUS
 CN Benzoic acid, 4-[[4-[[4-[16-[(4-cyanophenyl)methyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]phenyl]ethynyl]phenyl]ethynyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

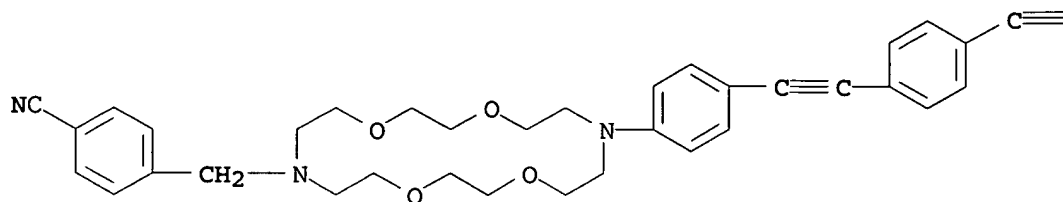


PAGE 1-B



IT 681486-36-2P 681486-37-3P 681486-39-5P
 681486-40-8P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (self-assembling light-emitting mols. and organic light-emitting devices using them)
 RN 681486-36-2 HCAPLUS
 CN Benzonitrile, 4-[[16-[[4-[[4-[(trimethylsilyl)ethynyl]phenyl]ethynyl]phenyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]methyl]- (9CI) (CA INDEX NAME)

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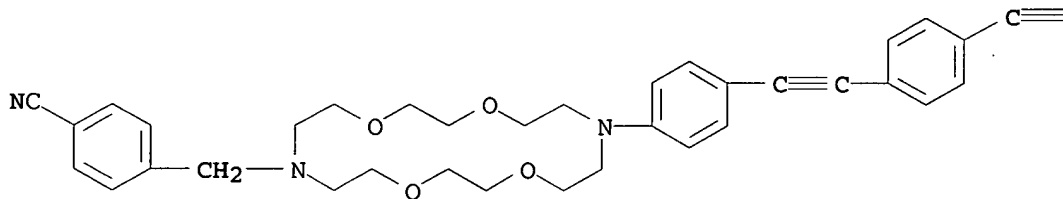


PAGE 1-B

$\equiv \text{C}-\text{SiMe}_3$

RN 681486-37-3 HCAPLUS
 CN Benzonitrile, 4-[[16-[4-[(4-ethynylphenyl)ethynyl]phenyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]methyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

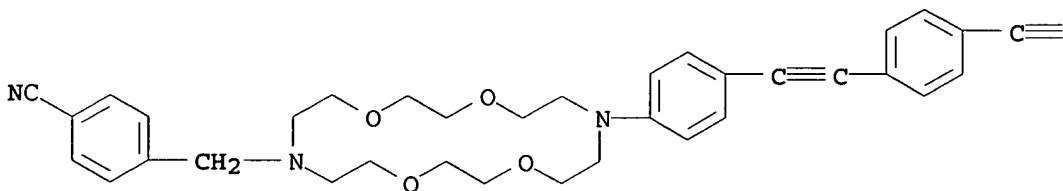


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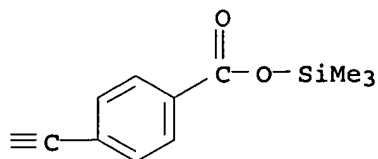
$\equiv \text{CH}$

RN 681486-39-5 HCAPLUS
 CN Benzoic acid, 4-[[4-[[4-[16-[(4-cyanophenyl)methyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]phenyl]ethynyl]phenyl]ethynyl]-, trimethylsilyl ester (9CI) (CA INDEX NAME)

PAGE 1-A

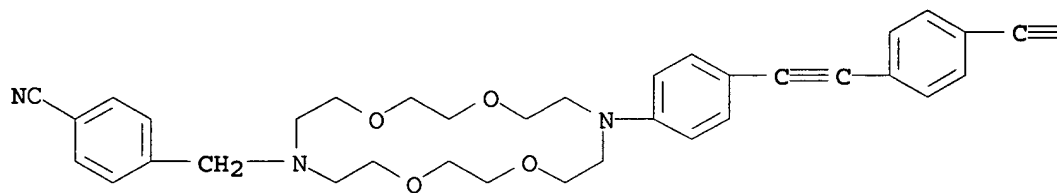


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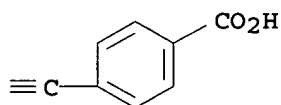


RN 681486-40-8 HCAPLUS
 CN Benzoic acid, 4-[[[4-[[[4-[16-[(4-cyanophenyl)methyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]phenyl]ethynyl]phenyl]ethynyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L32 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2004:802359 HCAPLUS
 DN 141:304001
 TI **Light emitting molecules and organic light emitting devices including light emitting molecules**
 IN Caballero, Gabriel Joseph
 PA USA
 SO U.S. Pat. Appl. Publ., 47 pp., Cont.-in-part of U.S. Ser. No. 654,586.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004191567	A1	20040930	US 2004-794920	20040304
	US 2004108509	A1	20040610	US 2003-654586	20030902
PRAI	US 2002-407813P	P	20020903		
	US 2003-654586	A2	20030902		

OS MARPAT 141:304001
 AB **Light-emitting mols.** are described which comprise at a first end of the mol. a terminal anchoring group bonded to a conjugated group which is bonded to a light-emitting group, and, at the other end, a terminal charge

transport group. The **light emitting group** may comprise a metal, especially a lanthanide. The **mols.** allow self-assembly of **light-emitting mols.** on a substrate with the anchoring groups serving to attach the **mols.** to the substrate. **Organic light-emitting devices**, **pixels**, and **displays** employing the **mols.** are also described.

- IC ICM H05B033-14
ICS C09K011-06
- INCL 428690000; 428917000; 313504000; 257040000; 257088000
- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
- ST self assembling **light emitting mol**
electroluminescent display
- IT **Electroluminescent devices**
(displays; self-assembling **light-emitting mols.** and **organic light-emitting devices** using them)
- IT Luminescent screens
Luminescent substances
(**electroluminescent**; self-assembling **light-emitting mols.** and **organic light-emitting devices** using them)
- IT **Electroluminescent devices**
(**organic**; self-assembling **light-emitting mols.** and **organic light-emitting devices** using them)
- IT Self-assembly
(self-assembling **light-emitting mols.** and **organic light-emitting devices** using them)
- IT 7429-91-6, Dysprosium, uses 7440-27-9, Terbium, uses 7440-53-1D, Europium, reaction products with **organic mols.** 22541-18-0D, Europium +3, reaction products with **organic mols.**, uses 22541-20-4, Terbium +3, uses 22541-21-5, Dysprosium +3, uses
RL: DEV (Device component use); USES (Uses)
(self-assembling **light-emitting mols.** and **organic light-emitting devices** using them)
- IT 16922-05-7DP, Europium acetate, reaction products with crown compds. **681486-40-8DP**, reaction products with europium acetate and silicon substrates
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(self-assembling **light-emitting mols.** and **organic light-emitting devices** using them)
- IT 540-37-4, 4-Iodoaniline 589-87-7, 1-Bromo-4-iodobenzene 619-58-9, 4-Iodobenzoic acid 1066-54-2, Trimethylsilylacetylene 17201-43-3, 1-Bromomethyl-4-cyanobenzene 23978-55-4, 4,13-Diaza-18-crown-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(self-assembling **light-emitting mols.** and **organic light-emitting devices** using them)
- IT 16116-78-2P, 4-Bromophenylethynyltrimethylsilane 75867-39-9P
134856-58-9P, [(4-Iodophenyl)ethynyl]trimethylsilane 176977-39-2P
681486-33-9P **681486-34-0P** **681486-35-1P** **681486-36-2P**
681486-37-3P **681486-38-4P** **681486-39-5P**
681486-40-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(self-assembling **light-emitting mols.** and **organic light-emitting devices** using them)
- IT **681486-40-8DP**, reaction products with europium acetate and silicon

substrates

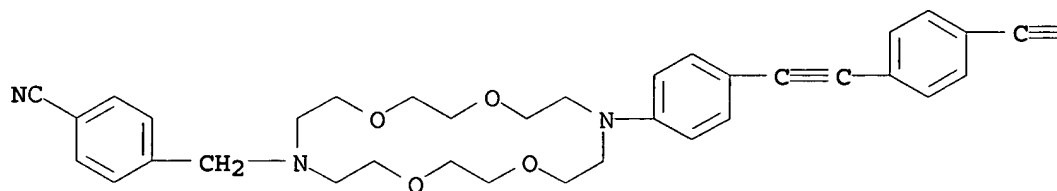
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(self-assembling light-emitting mols. and organic light-emitting devices using them)

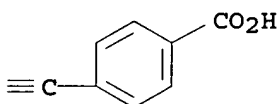
RN 681486-40-8 HCAPLUS

CN Benzoic acid, 4-[[4-[[4-[16-[(4-cyanophenyl)methyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]phenyl]ethynyl]phenyl]ethynyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 681486-36-2P 681486-37-3P 681486-39-5P

681486-40-8P

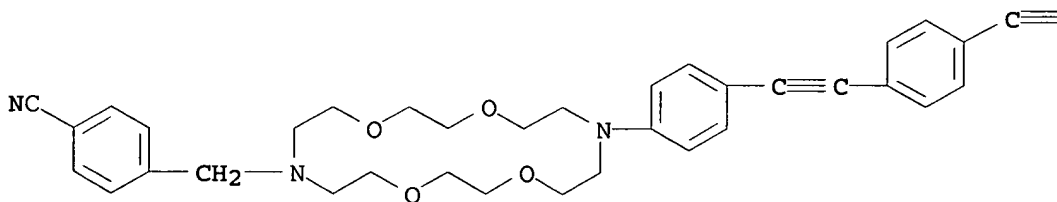
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(self-assembling light-emitting mols. and organic light-emitting devices using them)

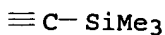
RN 681486-36-2 HCAPLUS

CN Benzonitrile, 4-[[16-[4-[[4-[(trimethylsilyl)ethynyl]phenyl]ethynyl]phenyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]methyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

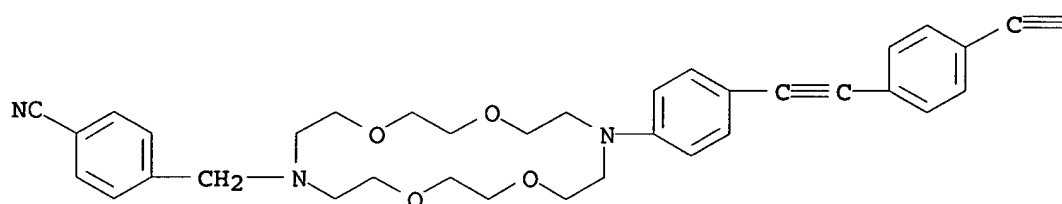


PAGE 1-B



RN 681486-37-3 HCAPLUS
 CN Benzonitrile, 4-[[[16-[4-[(4-ethynylphenyl)ethynyl]phenyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]methyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

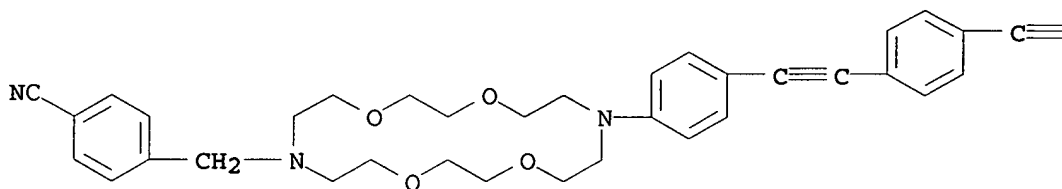


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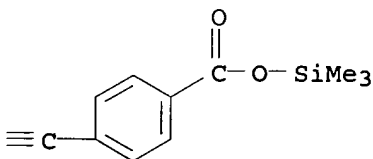
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RN 681486-39-5 HCAPLUS
 CN Benzoic acid, 4-[[[4-[[4-[16-[(4-cyanophenyl)methyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]phenyl]ethynyl]phenyl]ethynyl]-, trimethylsilyl ester (9CI) (CA INDEX NAME)

PAGE 1-A

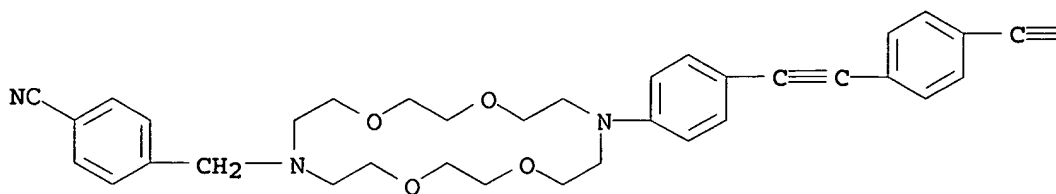


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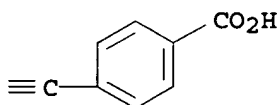


RN 681486-40-8 HCAPLUS
 CN Benzoic acid, 4-[[[4-[[4-[16-[(4-cyanophenyl)methyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]phenyl]ethynyl]phenyl]ethynyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L32 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:333937 HCAPLUS

DN 140:365376

TI **Light emitting molecules** and organic
light emitting devices including light
emitting molecules

IN Caballero, Gabriel Joseph

PA Coled Technologies, Inc., USA

SO PCT Int. Appl., 55 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004034015	A2	20040422	WO 2003-US27412	20030902
	WO 2004034015	A3	20040729		
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,				
	GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,				
	LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,				
	PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,				
	TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,				
	KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,				
	FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,				
	BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003296900	A1	20040504	AU 2003-296900	20030902
PRAI	US 2002-407813P	P	20020903		
	WO 2003-US27412	W	20030902		

AB A light emitting mol. is described comprising an anchoring group; a charge transport group having a first end and a second end, said first end of said charge transport group being bonded to said anchoring group, said charge transport group being configured to provide transport of elec. energy, said transport of elec. energy being substantially one-dimensional; a light emissive group bonded to said second end of said charge transport group; and a charge transfer group bonded to said light emissive group. A pixel element comprising the

light emitting mol. is also described. An organic LED and a display device comprising the light emitting mol. are also described.

IC ICM G01N

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 74, 75, 76

ST electroluminescent silane mol display pixel device

IT Electroluminescent devices

(displays; light emitting silane mols. and organic light emitting devices including light emitting mols.)

IT Luminescent screens

Luminescent substances

(electroluminescent; light emitting silane mols. and organic light emitting devices including light emitting mols.)

IT Electroluminescent devices

(light emitting silane mols. and organic light emitting devices including light emitting mols.)

IT 7429-91-6, Dysprosium, uses 7440-27-9, Terbium, uses 7440-53-1, Europium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(light emitting group; light emitting silane mols. and organic light emitting devices including light emitting mols.)

IT 7440-21-3, Silicon, uses 50926-11-9, Indium tin oxide

RL: DEV (Device component use); USES (Uses)

(light emitting silane mols. and organic light emitting devices including light emitting mols.)

IT 681486-39-5P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(light emitting silane mols. and organic light emitting devices including light emitting mols.)

IT 75-77-4, Chlorotrimethylsilane, reactions 589-87-7, 1-Bromo-4-iodobenzene 619-58-9, 4-Iodobenzoic acid 1066-54-2 17201-43-3 23978-55-4, 4,13-Diaza-18-crown-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(light emitting silane mols. and organic light emitting devices including light emitting mols.)

IT 16116-78-2P 134856-58-9P, ((4-Iodophenyl)ethynyl)trimethylsilane

681486-33-9P 681486-34-0P 681486-35-1P 681486-36-2P

681486-37-3P 681486-38-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(light emitting silane mols. and organic light emitting devices including light emitting mols.)

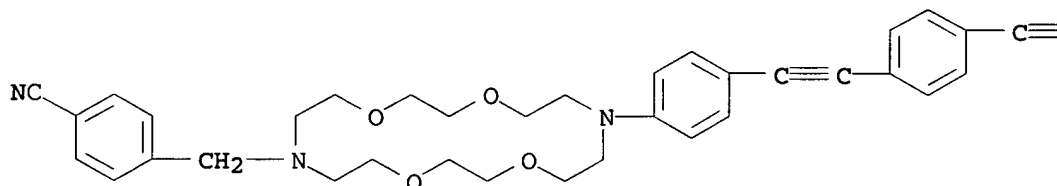
IT 681486-40-8P

RL: SPN (Synthetic preparation); PREP (Preparation)

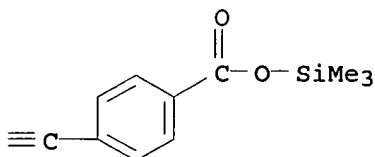
(light emitting silane mols. and organic

light emitting devices including
light emitting mols.)
IT 681486-39-5P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(light emitting silane mols. and organic
light emitting devices including
light emitting mols.)
RN 681486-39-5 HCAPLUS
CN Benzoic acid, 4-[[[4-[[4-[16-[(4-cyanophenyl)methyl]-1,4,10,13-tetraoxa-
7,16-diazacyclooctadec-7-yl]phenyl]ethynyl]phenyl]ethynyl]-,
trimethylsilyl ester (9CI) (CA INDEX NAME)

PAGE 1-A

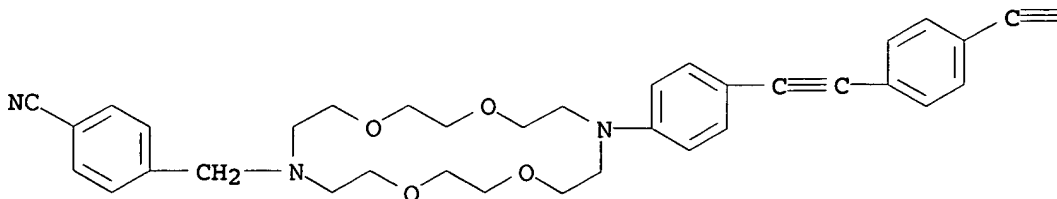


PAGE 1-B

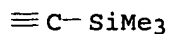


IT 681486-36-2P 681486-37-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(light emitting silane mols. and organic
light emitting devices including
light emitting mols.)
RN 681486-36-2 HCAPLUS
CN Benzonitrile, 4-[[[16-[4-[[4-[(trimethylsilyl)ethynyl]phenyl]ethynyl]phenyl]
]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]methyl]- (9CI) (CA INDEX
NAME)

PAGE 1-A

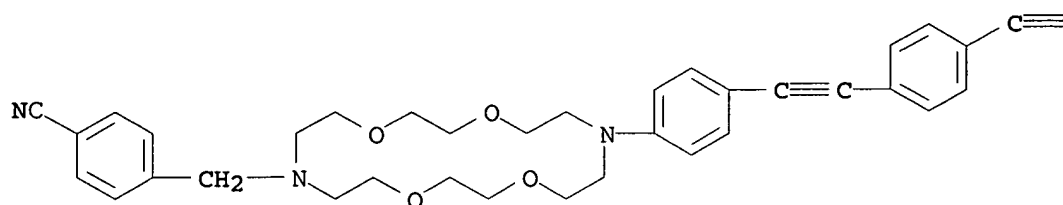


PAGE 1-B



RN 681486-37-3 HCAPLUS
 CN Benzonitrile, 4-[[[16-[4-[(4-ethynylphenyl)ethynyl]phenyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]methyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

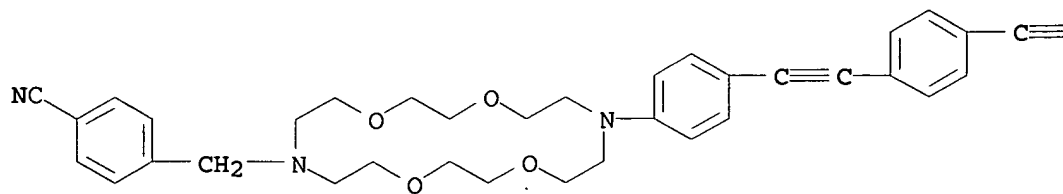


PAGE 1-B

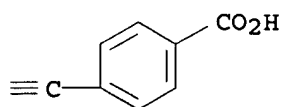


IT 681486-40-8P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (light emitting silane mols. and organic
 light emitting devices including
 light emitting mols.)
 RN 681486-40-8 HCAPLUS
 CN Benzoic acid, 4-[[[4-[[4-[16-[(4-cyanophenyl)methyl]-1,4,10,13-tetraoxa-7,16-diazacyclooctadec-7-yl]phenyl]ethynyl]phenyl]ethynyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

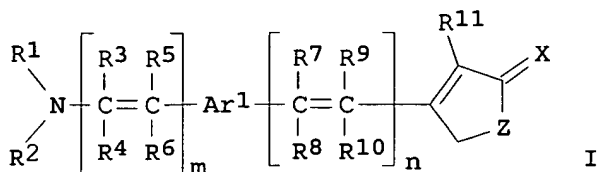


PAGE 1-B



L32 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2003:14424 HCAPLUS
 DN 138:80453
 TI Organic electroluminescent substance for
 electroluminescent device emitting yellow to red color
 light
 IN Toba, Yasumasa; Kanno, Masaki
 PA Toyo Ink Mfg. Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 24 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003003164	A2	20030108	JP 2001-189097	20010622
PRAI	JP 2001-189097		20010622		
OS	MARPAT 138:80453				
GI					



AB An alkylamino(hydrocarbyl) aromatic electroluminescent substance I [R1-2 = C1-18 monovalent organic group; R3-11 = H, C1-18 monovalent organic group; Ar1 = C4-30 (un)substituted divalent aromatic hydrocarbyl or aromatic heterocycle group; X = O, S, NY; Y = C1-18 monovalent organic group; Z = C2-20 (un)substituted divalent aliphatic hydrocarbyl group forming 5-7 membered ring; two groups selected from R1-11 and Ar1 may form a ring; m, n = 0, 1, 2; m + n ≥ 1]. An organic **electroluminescent device** comprising one or multiple organic layers between a pair of electrodes contains the substance in ≥1 of the organic layers. The device durably emits high intensity yellow to red color light at high efficiency.

IC ICM C09K011-06
 ICS C09K011-06; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 Section cross-reference(s): 25

ST yellow red emitting **electroluminescent device**
 alkylamino arom phosphor

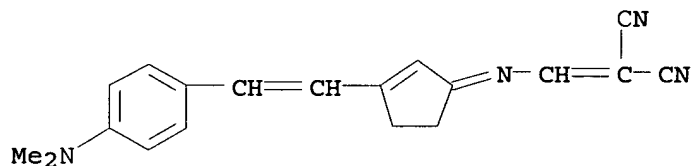
IT Phosphors
 (electroluminescent; organic electroluminescent substance emitting yellow- to red-color-light for **electroluminescent device**)

IT **Electroluminescent devices**
 (organic **electroluminescent** substance emitting yellow- to red-color-light for **electroluminescent device**)

IT 78-59-1, Isophoron 98-10-2, Benzenesulfonamide 100-10-7,
 4-Dimethylaminobenzaldehyde 110-89-4, Piperidine, reactions 2758-18-1,
 3-Methylcyclopent-2-enone 19172-47-5, Lawesson's reagent

RL: RCT (Reactant); RACT (Reactant or reagent)
 (in preparation of alkylamino(hydrocarbyl) aromatic electroluminescent substance emitting yellow- to red-color-light for

electroluminescent device)
 IT 6502-13-2P 481000-78-6P 481001-29-0P
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM
 (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (organic electroluminescent substance emitting yellow- to red-color-light
 for **electroluminescent device**)
 IT 481000-85-5 481000-86-6 481000-88-8 **481000-91-3**
 481000-92-4 481000-94-6 481000-95-7 481000-98-0 481000-99-1
 481001-02-9 481001-03-0 481001-06-3 481001-08-5 481001-11-0
 481001-12-1 481001-15-4 481001-16-5 481001-18-7 481001-19-8
 481001-22-3 481001-23-4 481001-26-7 481001-27-8 481001-31-4
 481001-34-7 481001-40-5 481001-42-7 481001-44-9
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (organic electroluminescent substance emitting yellow- to red-color-light
 for **electroluminescent device**)
 IT 481000-81-1P 481000-82-2P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material
 use); PREP (Preparation); USES (Uses)
 (organic electroluminescent substance emitting yellow- to red-color-light
 for **electroluminescent device**)
 IT **481000-91-3**
 RL: DEV (Device component use); TEM (Technical or engineered material
 use); USES (Uses)
 (organic electroluminescent substance emitting yellow- to red-color-light
 for **electroluminescent device**)
 RN 481000-91-3 HCAPLUS
 CN Propanedinitrile, [[[3-[2-[4-(dimethylamino)phenyl]ethenyl]-2-cyclopenten-
 1-ylidene]amino]methylene]- (9CI) (CA INDEX NAME)



L32 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:955538 HCAPLUS

DN 138:47002

TI Organic **electroluminescent** material and
electroluminescent device for red luminescence

IN Toba, Yasumasa; Kanno, Masaki

PA Toyo Ink Mfg. Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 25 pp.

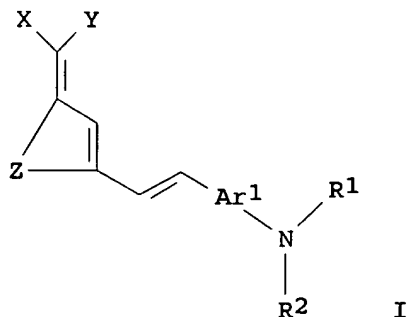
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002363549	A2	20021218	JP 2001-173614	20010608
PRAI	JP 2001-173614		20010608		
OS	MARPAT 138:47002				
GI					



AB The invention refers to an organic electroluminescent material I [X,Y = electron withdrawing group; Z = C2-20 (un)substituted divalent aliphatic hydrocarbon with a 5 - 7-membered ring; Ar1 = C4-30 (un)substituted divalent aromatic hydrocarbon or heterocyclic; R1,2 = C2-18 univalent straight chain aliphatic hydrocarbon; X and Y may be joined together to form a ring].

IC ICM C09K011-06

ICS C09K011-06; H05B033-14

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST electroluminescent device red luminescence
arom amine

IT **Electroluminescent devices**
(organic electroluminescent material and
electroluminescent device for red
luminescence)

IT	190715-09-4	478633-24-8	478633-26-0	478633-28-2	478633-30-6
	478633-34-0	478633-36-2	478633-38-4	478633-40-8	478633-42-0
	478633-44-2	478633-46-4	478633-48-6	478633-50-0	
	478633-58-8	478633-60-2	478633-62-4	478633-64-6	478633-66-8
	478633-68-0	478633-70-4	478633-72-6	478633-74-8	

RL: DEV (Device component use); USES (Uses)
(organic electroluminescent material and
electroluminescent device for red
luminescence)

IT 182246-77-1P 478633-21-5P 478633-32-8P 478633-52-2P 478633-55-5P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)

(organic electroluminescent material and
electroluminescent device for red
luminescence)

IT 68-12-2, Dimethylformamide, reactions 78-59-1, Isophorone 109-77-3,
Malonodinitrile 120-21-8, 4-Diethylaminobenzaldehyde 595-46-0,
Dimethyl malonic acid 613-28-5, 4-Dipropylamino benzaldehyde 1193-18-6
2758-18-1, 3-Methylcyclopenten-2-one

RL: RCT (Reactant); RACT (Reactant or reagent)
(organic electroluminescent material and
electroluminescent device for red
luminescence)

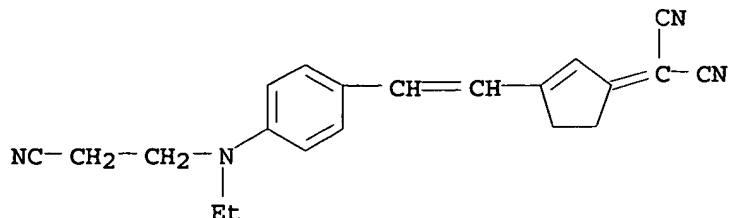
IT 478633-46-4

RL: DEV (Device component use); USES (Uses)
(organic electroluminescent material and
electroluminescent device for red
luminescence)

RN 478633-46-4 HCAPLUS

CN Propanedinitrile, [3-[2-[4-[(2-cyanoethyl)ethylamino]phenyl]ethenyl]-2-

cyclopenten-1-ylidene]- (9CI) (CA INDEX NAME)



L32 ANSWER 6 OF 6 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2002:655599 HCAPLUS
 DN 137:337755
 TI Synthesis of New Molecules Containing Head, Spacer, and Label Moieties
 AU Khatyr, Abderrahim; Maas, Huub; Calzaferri, Gion
 CS Department of Chemistry and Biochemistry, University of Bern, Bern, CH-3012, Switz.
 SO Journal of Organic Chemistry (2002), 67(19), 6705-6710
 CODEN: JOCEAH; ISSN: 0022-3263
 PB American Chemical Society
 DT Journal
 LA English
 OS CASREACT 137:337755
 GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB We describe the synthesis and characterization of novel stopcock mols. containing a head with precise shape, spacer, and label moieties. The protocol is based on a Pd(0)-catalyzed cross-coupling reaction between ethynylphenyl/bromide to obtain a rigid head followed by the attachment of a flexible spacer possessing two reactive functional groups on the termini. The final step consists of forming a covalent bond between spacer and label. In addition, monosubstituted soluble labels were synthesized in good yields. Examples of the products are I and II.

CC 27-14 (Heterocyclic Compounds (One Hetero Atom))
 Section cross-reference(s): 28, 41

ST stopcock mol head spacer label prepn; isoxazole sol dye prepn; zeolite contg stopcock mol

IT Dyes
 (preparation of soluble dyes)

IT Luminescence
 (stopcock mols. containing head with precise shape, spacer, and label moieties)

IT L zeolites
 RL: NUU (Other use, unclassified); USES (Uses)
 (stopcock mols. containing head with precise shape, spacer, and label moieties)

IT 473933-36-7P 473933-43-6P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (head-spacer; stopcock mols. containing head with precise shape, spacer, and label moieties)

IT 473933-42-5P
RL: SPN (Synthetic preparation); PREP (Preparation)
(head-spacer; stopcock mols. containing head with precise shape, spacer, and label moieties)

IT 473933-34-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(head; stopcock mols. containing head with precise shape, spacer, and label moieties)

IT 90-33-5, 7-Hydroxy-4-methylcoumarin 6066-82-6, N-Hydroxysuccinimide
RL: RCT (Reactant); RACT (Reactant or reagent)
(label; stopcock mols. containing head with precise shape, spacer, and label moieties)

IT 473933-46-9P 473933-48-1P 473933-50-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of soluble dyes)

IT 64852-75-1P 473933-52-7P 473933-53-8P
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of soluble dyes)

IT 123-11-5, p-Anisaldehyde, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with 1,4-diacetylbenzene; preparation of soluble dyes)

IT 766-97-2, 4-Ethynyltoluene
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with 2,6-dibromo-4-nitrobenzenamine; stopcock mols. containing head with precise shape, spacer, and label moieties)

IT 827-94-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with 4-ethynyltoluene; stopcock mols. containing head with precise shape, spacer, and label moieties)

IT 100-52-7, Benzaldehyde, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with acetophenone derivative; preparation of soluble dyes)

IT 1009-61-6, 1,4-Diacetylbenzene
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with p-anisaldehyde; preparation of soluble dyes)

IT 543-20-4, Succinyl chloride 927-58-2, 4-Bromobutyryl chloride
22809-37-6, 6-Bromohexanoyl chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(spacer; stopcock mols. containing head with precise shape, spacer, and label moieties)

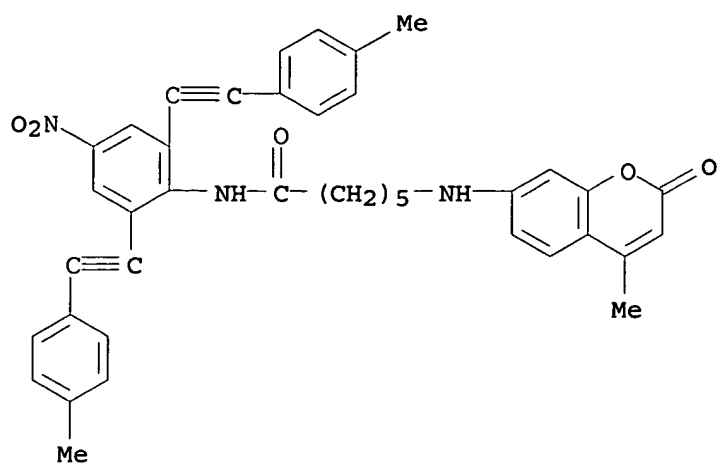
IT 473933-45-8P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(stopcock mols. containing head with precise shape, spacer, and label moieties)

IT 473933-38-9P 473933-40-3P
RL: SPN (Synthetic preparation); PREP (Preparation)
(stopcock mols. containing head with precise shape, spacer, and label moieties)

IT 473933-45-8P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(stopcock mols. containing head with precise shape, spacer, and label moieties)

RN 473933-45-8 HCAPLUS

CN Hexanamide, N-[2,6-bis[(4-methylphenyl)ethynyl]-4-nitrophenyl]-6-[(4-methyl-2-oxo-2H-1-benzopyran-7-yl)amino]- (9CI) (CA INDEX NAME)



RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

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